

Advantage ICF PIB 209

**Air and Vapour
Barrier
Requirements per
Canadian Code**

Advantage ICF System®

Product Information Bulletin

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Canadian Code Requirements for Air Barrier and Vapour Barrier Systems

The table below outlines National Building Code of Canada 2010 (NBC), 2014 Alberta Building Code (ABC), 2012 British Columbia Building Code (BCBC) and 2012 Ontario Building Code (OBC) provisions applicable to walls constructed with the **Advantage ICF System**®.

Air Barrier Systems - NBC, ABC, BCBC and OBC Subsections 5.4.1. and 9.25.3.

Articles 5.4.1.1. and 9.25.3.1. – Thermally insulated wall assemblies shall be constructed so as to include an air barrier system that will provide a continuous barrier to air leakage.

NBC, ABC and BCBC, Sentence 9.25.3.2.(1) – Air barrier systems shall possess the characteristics necessary to provide an effective barrier to air infiltration and exfiltration under differential air pressure due to stack effect, mechanical systems or wind.

NBC, ABC, BCBC and OBC Sentence 5.4.1.2.(1) and OBC Sentence 9.25.3.2.(1) – Sheet and panel type materials intended to provide the principal resistance to air leakage shall have an air leakage characteristic not greater than $0.02 \text{ L}/(\text{s}\cdot\text{m}^2)$ @ 75 Pa.

Advantage ICF System properties in relation to Code Requirements

NBC, ABC, BCBC and OBC, Table A-9.25.5.1.(1) - The air leakage characteristic is listed for 25-mm thick type 2 expanded polystyrene (EPS) insulation as $0.0214 \text{ L}/(\text{s}\cdot\text{m}^2)$ and for 50-mm reinforced concrete as “negligible.”

Based upon the above, either the 67-mm (2-5/8”) thick EPS insulation or the minimum 152 mm (6”) in the Advantage ICF System or the thick monolithic reinforced concrete core formed by the Advantage ICF System would satisfy the required air leakage characteristic of less than $0.02 \text{ L}/(\text{s}\cdot\text{m}^2)$ @ 75 Pa.

Vapour Barrier Systems – NBC, ABC, BCBC and OBC Subsections 5.5.1. and 9.25.4.

Articles 5.5.1.2. and 9.25.4.1. – Thermally insulated walls must be constructed with a vapour barrier so as to provide a barrier to diffusion of water vapour from the interior into wall spaces.

Sentence 9.25.4.2.(1) – The material providing the vapour barrier property must have a permeance not greater than $60 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$ when measured using ASTM E96, desiccant method (dry cup).

NBC, ABC, BCBC and OBC Sentence 9.25.4.2.(6) – Where foamed plastic insulation functions as the vapour barrier, it shall be sufficiently thick so as to meet the requirement of Sentence 9.25.4.2.(1).

Advantage ICF System properties in relation to Code Requirements

The vapour permeance characteristic for each 67-mm (2-5/8”) thick EPS insulation panel in the Advantage ICF System is less than $60 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$. **NBC, ABC, BCBC and OBC, Table A-9.25.5.1.(1)** lists the vapour permeance for 50-mm reinforced concrete as $23 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$.

Based upon the above, either the 67-mm (2-5/8”) EPS insulation in the Advantage ICF System or the monolithic reinforced concrete core formed by the Advantage ICF System would satisfy the minimum vapour permeance of $60 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$.

Note: In order to meet code provisions for air and vapour barrier systems, continuity must be maintained at all openings in walls and at floor/roof connection using approved sealing materials.